

REVERSIBLE ARITHMETIC CODING FOR QUANTUM DATA COMPRESSION

ABSTRACT

5 A method and structure for encoding/decoding a block of quantum data
including removing trailing eigenstates from the block that have eigenvalues
below a predetermined limit to retain leading eigenstates that have eigenvalues
above the predetermined limit, encoding the remaining quantum bits retained in
the block after the removing. The remaining quantum bits can also include a
linear superposition of the leading eigenstates. The predetermined limit is based
10 upon a density matrix of the block. This method of encoding produces encoded
quantum bits and can further include decoding the encoded quantum bits by
reversing the encoding. The decoding reproduces the remaining quantum bits and
the encoding completely erases the remaining quantum bits. Further, the
invention can include outputting only an encoded or decoded result.